

probable malfunction or failure will result in a hazardous loss of braking ability or directional control of the airplane.

(e) In addition, for commuter category airplanes, the rejected takeoff brake kinetic energy capacity rating of each main wheel brake assembly must not be less than the kinetic energy absorption requirements determined under either of the following methods—

(1) The brake kinetic energy absorption requirements must be based on a conservative rational analysis of the sequence of events expected during a rejected takeoff at the design takeoff weight.

(2) Instead of a rational analysis, the kinetic energy absorption requirements for each main wheel brake assembly may be derived from the following formula—

$$KE=0.0443 WV^2N$$

where,

KE=Kinetic energy per wheel (ft.-lbs.);

W=Design takeoff weight (lbs.);

V=Ground speed, in knots, associated with the maximum value of V_1 selected in accordance with § 23.51(c)(1);

N=Number of main wheels with brakes.

[Amdt. 23-7, 34 FR 13092, Aug. 13, 1969, as amended by Amdt. 23-24, 44 FR 68742, Nov. 29, 1979; Amdt. 23-42, 56 FR 354, Jan. 3, 1991; Amdt. 23-49, 61 FR 5166, Feb. 9, 1996]

§ 23.737 Skis.

The maximum limit load rating for each ski must equal or exceed the maximum limit load determined under the applicable ground load requirements of this part.

[Doc. No. 26269, 58 FR 42165, Aug. 6, 1993]

§ 23.745 Nose/tail wheel steering.

(a) If nose/tail wheel steering is installed, it must be demonstrated that its use does not require exceptional pilot skill during takeoff and landing, in crosswinds, or in the event of an engine failure; or its use must be limited to low speed maneuvering.

(b) Movement of the pilot's steering control must not interfere with the retraction or extension of the landing gear.

[Doc. No. 27806, 61 FR 5166, Feb. 9, 1996]

FLOATS AND HULLS

§ 23.751 Main float buoyancy.

(a) Each main float must have—

(1) A buoyancy of 80 percent in excess of the buoyancy required by that float to support its portion of the maximum weight of the seaplane or amphibian in fresh water; and

(2) Enough watertight compartments to provide reasonable assurance that the seaplane or amphibian will stay afloat without capsizing if any two compartments of any main float are flooded.

(b) Each main float must contain at least four watertight compartments approximately equal in volume.

[Doc. No. 4080, 29 FR 17955, Dec. 18, 1964, as amended by Amdt. 23-45, 58 FR 42165, Aug. 6, 1993]

§ 23.753 Main float design.

Each seaplane main float must meet the requirements of § 23.521.

[Doc. No. 26269, 58 FR 42165, Aug. 6, 1993]

§ 23.755 Hulls.

(a) The hull of a hull seaplane or amphibian of 1,500 pounds or more maximum weight must have watertight compartments designed and arranged so that the hull auxiliary floats, and tires (if used), will keep the airplane afloat without capsizing in fresh water when—

(1) For airplanes of 5,000 pounds or more maximum weight, any two adjacent compartments are flooded; and

(2) For airplanes of 1,500 pounds up to, but not including, 5,000 pounds maximum weight, any single compartment is flooded.

(b) Watertight doors in bulkheads may be used for communication between compartments.

[Doc. No. 4080, 29 FR 17955, Dec. 18, 1964, as amended by Amdt. 23-45, 58 FR 42165, Aug. 6, 1993; Amdt. 23-48, 61 FR 5148, Feb. 9, 1996]

§ 23.757 Auxiliary floats.

Auxiliary floats must be arranged so that, when completely submerged in fresh water, they provide a righting moment of at least 1.5 times the upsetting moment caused by the seaplane or amphibian being tilted.

PERSONNEL AND CARGO
ACCOMMODATIONS

§ 23.771 Pilot compartment.

For each pilot compartment—

(a) The compartment and its equipment must allow each pilot to perform his duties without unreasonable concentration or fatigue;

(b) Where the flight crew are separated from the passengers by a partition, an opening or openable window or door must be provided to facilitate communication between flight crew and the passengers; and

(c) The aerodynamic controls listed in § 23.779, excluding cables and control rods, must be located with respect to the propellers so that no part of the pilot or the controls lies in the region between the plane of rotation of any inboard propeller and the surface generated by a line passing through the center of the propeller hub making an angle of 5 degrees forward or aft of the plane of rotation of the propeller.

[Doc. No. 4080, 29 FR 17955, Dec. 18, 1964, as amended by Amdt. 23–14, 38 FR 31821, Nov. 19, 1973]

§ 23.773 Pilot compartment view.

(a) Each pilot compartment must be—

(1) Arranged with sufficiently extensive, clear and undistorted view to enable the pilot to safely taxi, takeoff, approach, land, and perform any maneuvers within the operating limitations of the airplane.

(2) Free from glare and reflections that could interfere with the pilot's vision. Compliance must be shown in all operations for which certification is requested; and

(3) Designed so that each pilot is protected from the elements so that moderate rain conditions do not unduly impair the pilot's view of the flight path in normal flight and while landing.

(b) Each pilot compartment must have a means to either remove or prevent the formation of fog or frost on an area of the internal portion of the windshield and side windows sufficiently large to provide the view specified in paragraph (a)(1) of this section. Compliance must be shown under all expected external and internal ambient operating conditions, unless it can be

shown that the windshield and side windows can be easily cleared by the pilot without interruption of moral pilot duties.

[Doc. No. 26269, 58 FR 42165, Aug. 6, 1993]

§ 23.775 Windshields and windows.

(a) The internal panels of windshields and windows must be constructed of a nonsplintering material, such as nonsplintering safety glass.

(b) The design of windshields, windows, and canopies in pressurized airplanes must be based on factors peculiar to high altitude operation, including—

(1) The effects of continuous and cyclic pressurization loadings;

(2) The inherent characteristics of the material used; and

(3) The effects of temperatures and temperature gradients.

(c) On pressurized airplanes, if certification for operation up to and including 25,000 feet is requested, an enclosure canopy including a representative part of the installation must be subjected to special tests to account for the combined effects of continuous and cyclic pressurization loadings and flight loads, or compliance with the fail-safe requirements of paragraph (d) of this section must be shown.

(d) If certification for operation above 25,000 feet is requested the windshields, window panels, and canopies must be strong enough to withstand the maximum cabin pressure differential loads combined with critical aerodynamic pressure and temperature effects, after failure of any load-carrying element of the windshield, window panel, or canopy.

(e) The windshield and side windows forward of the pilot's back when the pilot is seated in the normal flight position must have a luminous transmittance value of not less than 70 percent.

(f) Unless operation in known or forecast icing conditions is prohibited by operating limitations, a means must be provided to prevent or to clear accumulations of ice from the windshield so that the pilot has adequate view for taxi, takeoff, approach, landing, and to perform any maneuvers within the operating limitations of the airplane.